Source Water Assessment Program (SWAP) Report for Bachelor Knolls

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: September 24, 2001

Table 1: Public Water System (PWS) Information

PWS Name	**Bachelor Knolls**
PWS Address	**P.O. Box**
City/Town	**Granby, Massachusetts**
PWS ID Number	**1111000**
Local Contact	**Mr. Edward Powers**
Phone Number	**413-467-9039**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1111003-01G	279	746	Moderate

Introduction

We are all concerned about the quality of the water we drink. Many potential contaminant sources, including septic systems, road salt and improperly disposed of hazardous materials may threaten the quality of water from drinking water wells. Citizens and local officials can work together to better protect drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Bachelor Knolls water system is a residential subdivision located off of Bachelor Street in the north central part of Granby. The subdivision consists of 31 single-family residential homes served by on-site septic systems and a single public water supply well. Granby does not have a municipal water supply or municipal sewer. The neighborhood is served by a single well, Well #1 (01G) that pumps to the storage tank.

The Zone I and Interim Wellhead Protection Area radii for Well #1 are 279 feet and 746 feet, respectively. The protective radii were based on metered usage for the two highest months on record for the well. Please refer to the attached map that shows the Zone I and IWPA radii. The Zone I is the area immediately around the wellhead while the IWPA is a larger area that likely contributes water to the wellhead. The IWPA is only an interim protection area; the actual area of contribution to the wells may be larger or smaller.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

Well #1 is an 8-inch diameter well reportedly drilled to a depth of 130 feet. Well #1 is located in a small block building and utilizes a vertical turbine pump to fill the adjacent storage tanks. The subdivision is located in an area mapped as a potentially medium yield overburden (gravel) aquifer; there is no confining (clay) unit mapped in this area. The bedrock is mapped as sedimentary rocks of the Jurassic Period. There is no record of well construction, materials encountered during drilling, or of whether the well withdraws water from the gravel or the bedrock aquifer. There is no record of a significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the gravel or the bedrock aquifer. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface.

The Bachelor Knolls well water does not require and does not have treatment at this time. For current information on monitoring results, please review the Consumer Confidence report (CCR) that is issued annually by the water supplier or refer questions to the water supply contact listed above in Table 1.

2. Discussion of Land Uses in the Protection Areas

A number of land uses and activities within the drinking water supply protection areas are potential sources of contamination. Therefore, the overall ranking of susceptibility to contamination for the wells is moderate, based on the presence of several moderate threat land uses or activities in the Zone I and IWPA, as seen in Tables 2 and 3.

Key Land Use Issues include:

1. **Non-conforming activities in the Zone I**
2. **Residential homes**
3. **Septic systems**

1. Non-conforming activities in the Zone Is – The Zone I for Well #1 is non-conforming with respect to MA DEP land use restrictions, which allow only water supply related activities in the Zone I. The Zone I for Well #1 contains all activities associated with a residential neighborhood: roadways, transformers and residential homes. Please note that systems not meeting DEP Zone I requirements must receive DEP approval and address Zone I issues prior to increasing water use, modifying systems or conducting any activities within Zone I.

Recommendations:

✓ Do not conduct any additional activities within the Zone I. Contact MA DEP prior to conducting any activities within Zone I.

Table 2: Table of Activities Common to the Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Roadways	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells
Transformers	Yes	Yes	Moderate	Potential release of MODF; contact utility to inform them you are a PWS
Septic system components	Yes	Yes	Moderate	Several residential systems in Zone I; multiple in IWPA
Residential homes, lawns and swimming pools	Yes	Yes	Moderate	Household hazardous materials, pesticides and herbicides

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

- ✓ Prepare an emergency response plan for responding to an accidental release of hazardous materials such as home heating fuel or gasoline.
- ✓ Monitor the Zone I and IWPA for spills and leaks of materials such as household hazardous materials and petroleum products.

2. Residential homes – Residential development includes the subdivision and abutting residential neighborhoods. Normal residential activities pose minimal threat to the water quality of the public water supply as well as their own private supply, provided homeowners are aware of the potential hazards of household waste (including automotive maintenance), lawn care chemicals, pool chemicals, animal waste and septic systems and they utilize best management practices.

Recommendations:

- ✓ Provide residents with information about protecting the facility's resources. Include information on Best Management Practices (BMPs) for the use of pesticides, household hazardous waste and septic system maintenance and disposal practices.

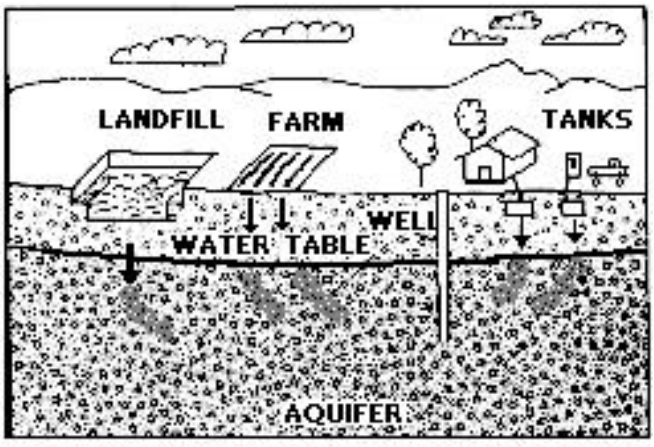

Figure 1: Example of how a well could become contaminated by different land uses and activities.

- ✓ Encourage residents to participate in household hazardous waste collection days and the paint exchange program in Granby.

3. Septic Systems - Granby does not have municipal sewers in this area, therefore all homes are served by on-site septic disposal. The most significant threats from a septic system are from lack of maintenance and improper disposal of non-sanitary waste.

Recommendations:

- ✓ Provide residents with information about proper maintenance and disposal practices for septic systems. Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

Work with the DEP and local officials regarding protecting the water supplies through emergency response coordination, especially with respect to spills and accidental releases that may be discharged through storm drains.

3. Protection Recommendations

To reduce the system's susceptibility to contamination, the Bachelor Knolls water supplier should review and adopt the following recommendations:

Priority Recommendation:

- ✓ Provide residents with information about protecting the neighborhood's resources. Include information on Best Management Practices (BMPs) for the use of pesticides, household hazardous waste and septic system maintenance and disposal practices. Keep up to date on the Hazardous Waste Pickup dates in Granby and the schedules for the paint exchange shed and inform residents. Refer to the following website for guidance http://www.state.ma.us/dep/consumer/consumer.htm

Zone I and IWPA:

- ✓ Keep all new non-water supply activities out of the Zone I.
- ✓ Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use, modifying their system or conducting any additional non-conforming activities in Zone I.
- ✓ Continue the practice of prohibiting public access to the well by locking facilities, and posting signs.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any aboveground tanks for leaks, etc.
- ✓ Consider alternative sites for a new well and protect that land for future use through purchase or conservation restriction that would prohibit potentially threatening activities if Zone I threats cannot be mitigated.
- ✓ Work with the DEP and local officials regarding protecting the water supplies through emergency response coordination.

Glossary

Zone I: The area closest to a well; a 100 to 400-foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at: www.state.ma.us/dep/brp/dws

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

- ✓ Be sure that the town is aware that your facility is a public water supply so that you can be notified of any accidents or threats from accidents. Ask that your facility be included in Town wide water supply protection efforts.

Training and Education:

- ✓ Train the water supply personnel on proper emergency response and best management practices so that you may assist the residents in protecting their water supply.
- ✓ Maintain the drinking water protection area signs at key visibility locations along the roadway.

Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of any hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/bwp/dhm/dhmpubs.html.
- ✓ Continue the practice of not utilizing fertilizers or pesticides near the supply.
- ✓ For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. Especially the transformers in Zone I. If PCBs are present, inform the utility that you are a PWS and urge the immediate replacement of the MODF. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- ✓ Work with local officials in town to include the facility IWPA in an Aquifer Protection District Bylaws and to assist you in improving protection. Prepare a wellhead protection plan.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Maps of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet
- Developing a Local Wellhead Protection Plan
- Pesticide Use Fact Sheet
- Fertilizer Use Fact Sheet

Additional References:

More information is available by request or online at www.state.ma.us/dep/brp/dws:

- Water Supply Protection Guidance Materials such as model regulations, BMP information, and general water supply protection information.
- MA DEP SWAP Strategy
- Land Use Pollution Potential Matrix
- Draft Land/Associated Contaminants Matrix

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